
Space Weather Forecast

Issued on Tuesday, 09 January 2024 at 01:26 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales <https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales>

Space Weather Forecast Headline: Chance of Moderate flares.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Low activity with peak flares in the common classification. There are ten sunspot regions, dominated by two clusters. One on the northwest disc, with several small diffuse spots, one of which shows signs of some magnetic complexity otherwise they are mostly simple. The other cluster consists of two sunspots in the southeast, both of which are showing some slow growth, but overall also remain relatively simple in terms of their configuration. A single large new region has rotated around the southeastern hemisphere in recent hours, currently appearing as a simple unipolar spot, with a large latitudinal extent. This may be part of a more complex region yet to rotate on, but currently this cannot be deduced with available imagery. No Earth-directed coronal mass ejections were observed.

Solar Wind / Geomagnetic Activity: Slow wind conditions, with background speeds observed (300-360 km/s). Interplanetary magnetic field was weak with a variable and weak north-south component. Geomagnetic activity was Quiet.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) continued to gradually ease since their enhancement from the Strong flare on Dec 31, and remained well below the level of a minor radiation storm (S1).

Four-Day Space Weather Forecast Summary

Solar Activity: There is an ongoing chance of isolated Moderate flares with a slight chance of Strong class flares.

Solar Wind / Geomagnetic Activity: There are two potential glancing coronal mass ejection impacts, one from 05 Jan, arriving early day 1 (09 Jan) and another from 06 Jan, arriving later day 1 or day 2 (09-10 Jan), however these are both low confidence. Otherwise some interaction with the fast wind of a weak coronal hole remains possible day 1 (09 Jan), but this is likely to have only a very limited impact on observed solar winds. Quiet geomagnetic conditions are expected to persist for much of the period, but may rise to Unsettled days 1 and 2 (09-10 Jan), in association with any coronal mass ejection or coronal hole high speed stream arrival.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is expected to continue gradually easing, likely persisting well below the level of a minor radiation storm (S1). However further increases are possible with any notable flare activity.

Geomagnetic Storms:

Geo-Magnetic Storm	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC)	Day 2 (00-24 UTC)	Day 3 (00-24 UTC)	Day 4 (00-24 UTC)
Probability (Exceedance)			(%)	(%)	(%)	(%)
Minor or Moderate	G1 to G2	No	5	5	1	1
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC)	Day 2 (00-24 UTC)	Day 3 (00-24 UTC)	Day 4 (00-24 UTC)
Probability			(%)	(%)	(%)	(%)
Active	R1-R2 M Class	No	55	55	55	55
Very Active	R3 to R5 X	No	10	10	10	10

Solar Radiation Storms - (High Energy Protons):

Radiation Storms	Level (cm ⁻² sr ⁻¹ s ⁻¹)	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC)	Day 2 (00-24 UTC)	Day 3 (00-24 UTC)	Day 4 (00-24 UTC)
Probability (Exceedance)			(%)	(%)	(%)	(%)
Active	≥ S1	No	10	10	10	10
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = cm⁻²sr⁻¹s⁻¹)